

# Flexible, Lightweight, Low-Cost Organic Photovoltaics with Improved Efficiency, Phase I

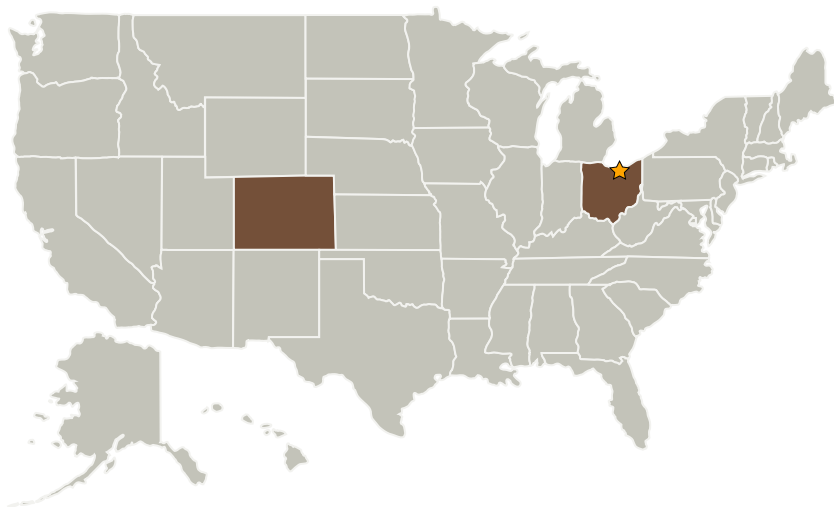
Completed Technology Project (2008 - 2008)



## Project Introduction

Both manned and unmanned off-Earth missions of the future will require very lightweight, high efficiency, flexible and durable photovoltaic (PV) arrays to generate electric power. Current PV technology horizons do not meet the requirements for expanded mission capability. Although inorganic PVs hold the record for solar power conversion efficiency, they are inflexible, heavy, and expensive to produce. There is increasing interest in a new type of PV technology that is based on organic semiconducting materials. Much of this research has been limited by the availability of stable n-type organic semiconductors. TDA Research, Inc. proposes to use a new class of n-type conjugated polymers to produce more efficient organic PV devices. Two of our new n-type materials are available through Sigma-Aldrich, and the current technology readiness level (TRL) stands at 3 with proof-of-concept results and commercial sales. At the end of this Phase I project we will have produced prototype organic PVs in the laboratory (TRL 4) and a successful Phase II project would lead to several commercial n-type organic semiconductor products being used in the full scale production of lightweight flexible PVs (TRL 6).

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Glenn Research Center (GRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
TDA Research, Inc.	Supporting Organization	Industry	Wheat Ridge, Colorado

Primary U.S. Work Locations	
Colorado	Ohio

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Shawn Sapp

## Technology Areas

**Primary:**

- TX03 Aerospace Power and Energy Storage
  - └ TX03.1 Power Generation and Energy Conversion
    - └ TX03.1.1 Photovoltaic